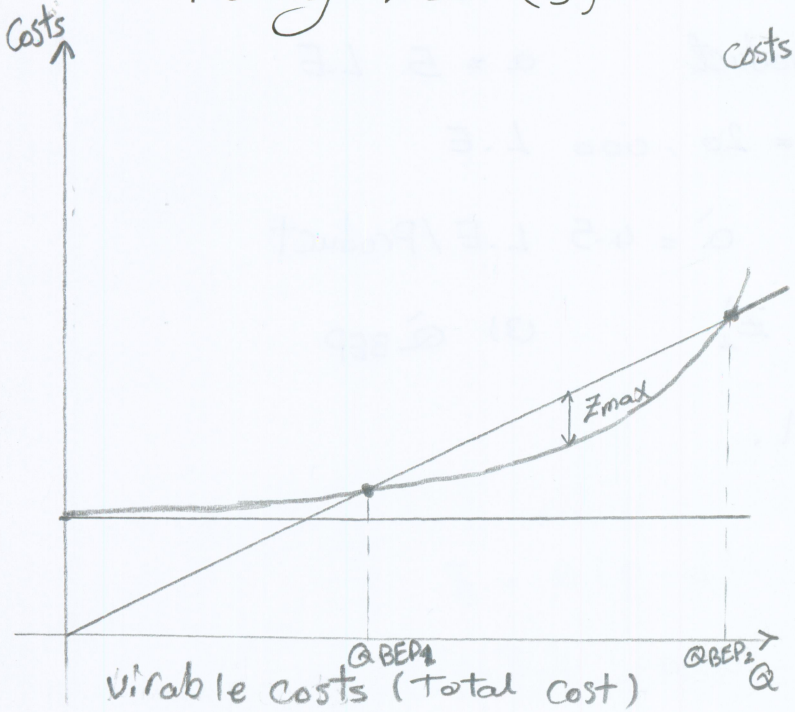
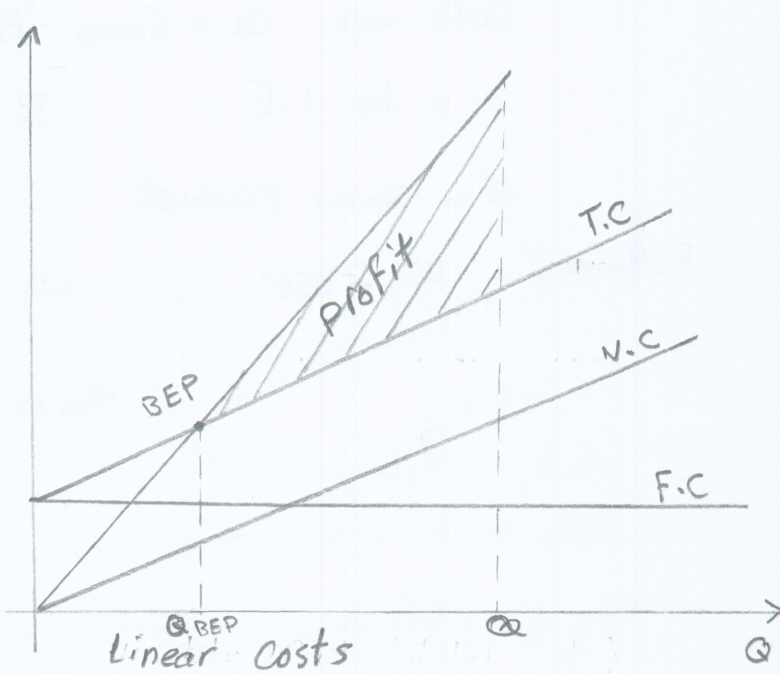
Marketing Lec (5)

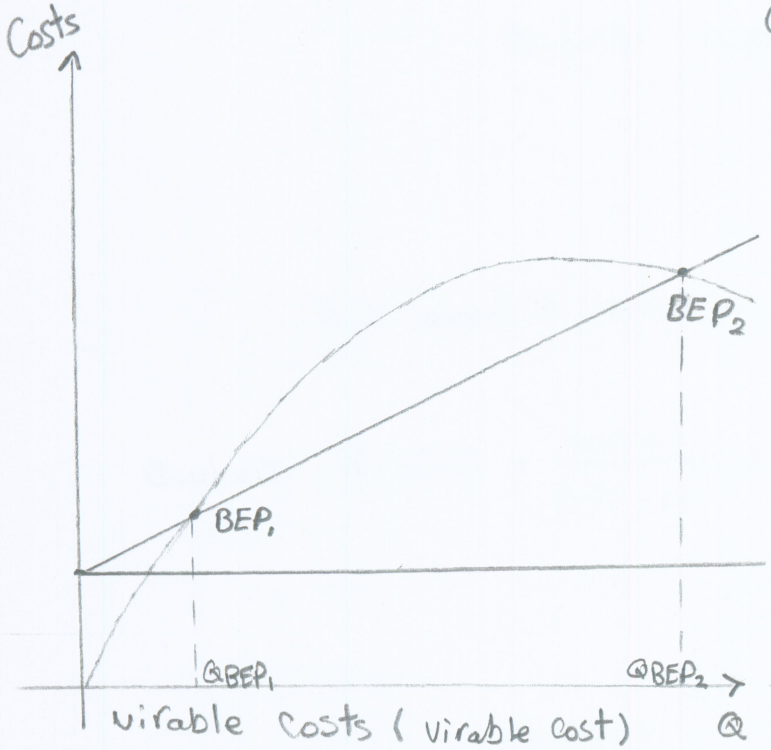
22/10/2016



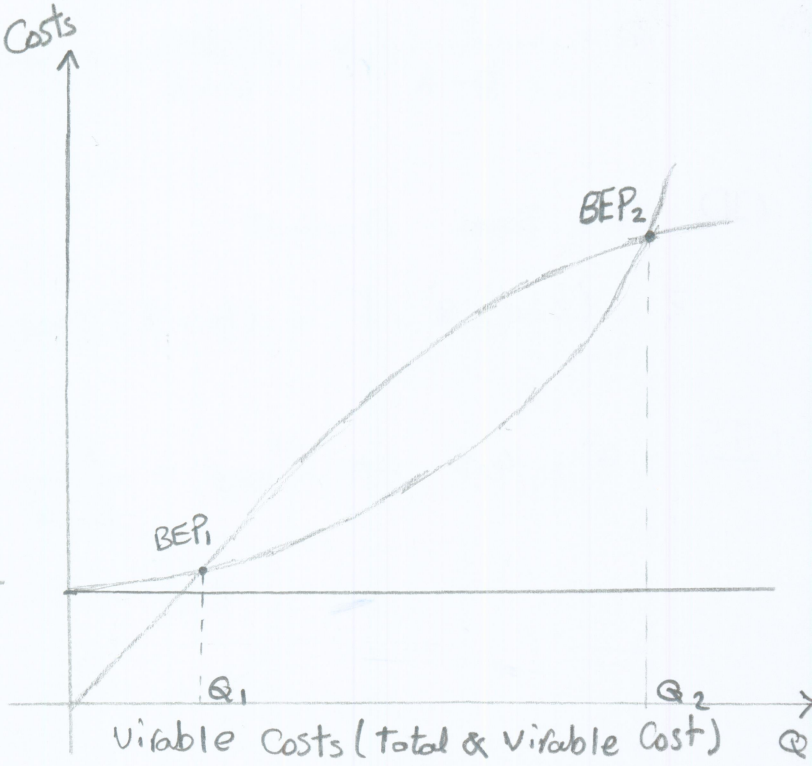
Virable Costs (Total Cost)



Linear Costs



Virable Costs (Virable Cost)



Virable Costs (Total & Virable Cost)

Ex (1) :

Data $\Rightarrow$ $Q = 6000$ Product $\quad a = 5$ L.E

$b = 10$ L.E $\quad Z = 20,000$ L.E

$Q' = 3000$ Product $\quad a' = 4.5$ L.E / Product

Required : (1) Q_{BEP} (2) Z_2' (3) Q'_{BEP}

Sol.

(I) S.I. = V.C + Profit

$bQ = F + aQ + Z \Rightarrow F = (b-a)Q - Z$

$F = (10-5)\,6000 - 20000 = 10000$ L.E.

at BEP $\Rightarrow Z = 0 \Rightarrow F = (b-a)Q$

$$Q = \frac{F}{b-a} = \frac{10\,000}{10-5} = 2000 \text{ Product}$$

(II) $Q' = 3000$ Product

$Z' = (b-a)Q' - F = (10-5)\,3000 - 10000 = 5000$ L.E.

(III) $a'' = 4.5 \Rightarrow Q'_{BEP} = \frac{F}{b-a'} = \frac{10\,000}{10-4.5} = 1818.8$ Product

Ex (2)

Data : $Q = 6000$ Lamps $b = 8.5$ L.E / Lamps

$a = 4.5$ L.E. / lamps $F = 200$ L.E. / month

- BEP $\Rightarrow$ after 4 monthes

Required : Q after 1 month

Z / Year (annual Profit)

Sol

(I) At BEP :

$$Q_{BEP} = \frac{F}{b-a} = \frac{200 * 12}{8.5 - 4.5} = 600 \text{ units}$$

$$Q_{month} = \frac{600}{4} = 150 \text{ units}$$

(II) $Z = (b-a)Q - F = (8.5 - 4.5) * (150 * 12) - (200 * 12)$

$= 4800$ L.E.

Ex (3)

Given a non Linear price Function.

Revenue $= 100Q - 0.001Q^2$ L.E. or $b = 100 - 0.001Q$

Total Cost $= 0.005Q^2 + 4Q + 200,000$ L.E. or $a = 0.005Q + 4$

Required : (i) what is the output For maximum Profit

(ii) what is the output at BEP

(iii) what is The output For minumum average cost

Sol.

(i) $Z = (b-a)\,Q - F$

$= bQ - (aQ + F)$

$= 100\,Q - 0.001\,Q^2 - 0.005\,Q^2 - 4Q - 200{,}000$

$= -0.006\,Q^2 + 96\,Q - 200{,}000$ ——— (1)

at max Profit $\longrightarrow \frac{dZ}{dQ} = 0$

$-0.012\,Q + 96 = 0 \longrightarrow Q = 8{,}000$ units

at (1) $Z = 184{,}000$ L.E

(ii) at BEP $\Longrightarrow$ (1) $= 0$

$Q_1 = 2{,}462.25$ units $\qquad Q_2 = 13537.7$ units

(iii) at T.C Function $\Longrightarrow$ Q at max Profit = average total Cost

Profit at average total cost = 552 000